AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions and listings of claims in the instant patent application.

Listing of claims:

1.-59. (Canceled)

60. (Currently amended) A composite array comprising:

a substrate having a surface;

a first assay location and a second assay location on said surface, said first assay location being separated from said second assay location ~~by a non-permanent sealant~~;

a first plurality of depressions located within said first assay location and a second plurality of depressions located within said second assay location, wherein said first and second plurality of depressions are configured to contain a single microsphere;

a first population of microspheres comprising a first bioactive agent, said first population of microspheres randomly distributed at said first assay location such that depressions of said first plurality of depressions have a single microsphere from said first population of microspheres associated therewith; and

a second population of microspheres comprising a second bioactive agent, said second population of microspheres randomly distributed at said second assay location such that depressions of said second plurality of depressions have a single microsphere from said second population of microspheres associated therewith.

61. (Previously presented) The composite array of claim 60, wherein substantially all the depressions within said first and second assay locations include a microsphere.

62. (Previously presented) The composite array of claim 60, wherein each depression of said first plurality of depressions is formed at the end of an optical fiber.

63. (Previously presented) The composite array of claim 60, wherein said first population of microspheres is detectable in a first detection channel and said second population of microspheres is detectable in a second detection channel that does not detect the first population of microspheres.

64. (Currently amended) The composite array of claim 60, wherein said ~~non-permanent sealant comprises a sealant selected from the group consisting of rubber, silicon, petroleum jelly, wax and parafilm~~ first assay location and said second assay location are separated by a gasket.

65. (Currently amended) The composite array of claim [[60]] 64, wherein said ~~non-permanent sealant comprises a~~ gasket comprises rubber or silicon.

66. (Previously presented) The composite array of claim 60, wherein said first bioactive agent comprises DNA.

67. (Previously presented) The composite array of claim 60, wherein said substrate comprises a microscope slide.

68. (Previously presented) The composite array of claim 60, wherein said substrate is enclosed within a hybridization chamber.

69. (Currently amended) The composite array of claim 68, wherein said hybridization chamber comprises a flexible ~~membranes~~ membrane.

70. (Previously presented) The composite array of claim 60, wherein said first and second assay locations are separately enclosed within a first and a second hybridization chamber.

71. (Currently amended) A method of making a composite array comprising:

providing a substrate having a surface;

providing a first assay location and a second assay location on said surface, said first assay location being separated from said second assay location ~~by a non-permanent sealant~~;

forming a first plurality of depressions at said first assay location and forming a second plurality of depressions as said second assay location, wherein said first and second plurality of depressions are configured to contain a single microsphere;

distributing randomly at said first assay location, a first population of microspheres comprising a first bioactive agent such that depressions of said first plurality of depressions have a single microsphere from said first population of microspheres associated therewith; and

distributing randomly at said second assay location, a second population of microspheres comprising a second bioactive agent such that depressions of said second plurality of depressions have a single microsphere from said second population of microspheres associated therewith.

72. (Previously presented) The method of claim 71, wherein substantially all the depressions within said first and second assay locations include a microsphere.

73. (Previously presented) The method of claim 71, wherein each depression of said first plurality of depressions is formed at the end of an optical fiber.

74. (Previously presented) The method of claim 71, wherein said first population of microspheres is detectable in a first detection channel and said second population of microspheres is detectable in a second detection channel that does not detect the first population of microspheres.

75. (Currently amended) The method of claim 71, wherein said ~~non-permanent sealant comprises a sealant selected from the group consisting of rubber, silicon, petroleum jelly, wax and parafilm~~ first assay location and said second assay location are separated by a gasket.

76. (Currently amended) The method of claim [[71]] 75, wherein said ~~non-permanent sealant comprises a~~ gasket comprises rubber or silicon.

77. (Previously presented) The method of claim 71, wherein said first bioactive agent comprises DNA.

78. (Previously presented) The method of claim 71, wherein said substrate comprises a microscope slide.

79. (Previously presented) The method of claim 71, wherein said substrate is enclosed within a hybridization chamber.

80. (Currently amended) The method of claim 79, wherein said hybridization chamber comprises a flexible ~~membranes~~ membrane.

81. (Previously presented) The method of claim 71, wherein said first and second assay locations are separately enclosed within a first and a second hybridization chamber.

82. (Previously presented) The method of claim 71, wherein said plurality of first depressions is a plurality of wells.

83. (Currently amended) A composite array comprising:

a substrate having a surface, said surface having depressions located thereon, wherein every depression on said surface contains either one microsphere or no microsphere;

a first assay location and a second assay location on said surface, said first assay location being separated from said second assay location ~~by a non-permanent sealant~~;

a first plurality of depressions located within said first assay location and a second plurality of depressions located within said second assay location;

a first population of microspheres comprising a first bioactive agent, said first population of microspheres randomly distributed at said first assay location such that depressions of said first plurality of depressions have a single microsphere from said first population of microspheres contained therein; and

a second population of microspheres comprising a second bioactive agent, said second population of microspheres randomly distributed at said second assay location such that depressions of said second plurality of depressions have a single microsphere from said second population of microspheres contained therein.

84. (Previously presented) The composite array of claim 83, wherein substantially all the depressions within said first and second assay locations include a microsphere.

85. (Previously presented) The composite array of claim 83, wherein each depression of said first plurality of depressions is formed at the end of an optical fiber.

86. (Previously presented) The composite array of claim 83, wherein said first population of microspheres is detectable in a first detection channel and said second population of microspheres is detectable in a second detection channel that does not detect the first population of microspheres.

87. (Currently amended) The composite array of claim 83, wherein said ~~non-permanent sealant comprises a sealant selected from the group consisting of rubber, silicon, petroleum jelly, wax and parafilm~~ first assay location and said second assay location are separated by a gasket.

88. (Currently amended) The composite array of claim [[83]] 87, wherein said ~~non-permanent sealant comprises a~~ gasket comprises rubber or silicon.

89. (Previously presented) The composite array of claim 83, wherein said first bioactive agent comprises DNA.

90. (Previously presented) The composite array of claim 83, wherein said substrate comprises a microscope slide.

91. (Previously presented) The composite array of claim 83, wherein said substrate is enclosed within a hybridization chamber.

92. (Currently amended) The composite array of claim 91, wherein said hybridization chamber comprises a flexible ~~membranes~~ membrane.

93. (Previously presented) The composite array of claim 83, wherein said first and second assay locations are separately enclosed within a first and a second hybridization chamber.

94. (New) A method of making a composite array comprising:

providing a substrate having a surface, said surface comprising a first assay location comprising a first plurality of depressions and a second assay location comprising a second plurality of depressions, said first assay location being separated from said second assay location;

distributing randomly on said substrate, a first population of microspheres comprising a genomic DNA such that depressions of said first plurality of depressions have a single microsphere from said first population of microspheres associated therewith; and

distributing randomly on said substrate, a second population of microspheres lacking a genomic DNA such that depressions of said second plurality of depressions have a single microsphere from said second population of microspheres associated therewith.

95. (New) The method of claim 94, wherein said second plurality of depressions have microspheres from said first population of microspheres and said second population of microspheres associated therewith.

96. (New) The method of claim 94, wherein said first plurality of depressions have microspheres from said first population of microspheres and said second population of microspheres associated therewith.

97. (New) The method of claim 94, wherein substantially all the depressions within said first and second assay locations include a microsphere.

98. (New) The method of claim 94, wherein each depression of said first plurality of depressions is formed at the end of an optical fiber.

99. (New) The method of claim 94, wherein said first population of microspheres is detectable in a first detection channel and said second population of microspheres is detectable in a second detection channel that does not detect the first population of microspheres.

100. (New) The method of claim 94, wherein said first assay location and said second assay location are separated by a gasket.

101. (New) The method of claim 100, wherein said gasket comprises rubber or silicon.

102. (New) The method of claim 94, wherein said substrate comprises a microscope slide.

103. (New) The method of claim 94, wherein said substrate is enclosed within a hybridization chamber.

104. (New) The method of claim 103, wherein said hybridization chamber comprises a flexible membrane.

105. (New) The method of claim 94, wherein said first and second assay locations are separately enclosed within a first and a second hybridization chamber.

106. (New) The method of claim 94, wherein said plurality of first depressions is a plurality of wells.

107. (New) The method of claim 94 further comprising preparing said genomic DNA using an amplification process.

108. (New) The method of claim 107, wherein said amplification process comprises PCR.

109. (New) The method of claim 94 further comprising sequencing said genomic DNA.

110. (New) The method of claim 109, wherein said sequencing comprises pyrosequencing.

111. (New) The method of claim 109, wherein said sequencing comprises dideoxysequencing.

112. (New) The composition of claim 60, wherein said first population of microspheres is distributed such that depressions of said second plurality of depressions have microspheres from said first population of microspheres and said second population of microspheres associated therewith.

113. (New) The composition of claim 60, wherein said second population of microspheres is distributed such that depressions of said first plurality of depressions have microspheres from said second population of microspheres and said first population of microspheres associated therewith.

114. (New) The method of claim 71, wherein said first population of microspheres is distributed such that depressions of said second plurality of depressions have microspheres from said first population of microspheres and said second population of microspheres associated therewith.

115. (New) The method of claim 71, wherein said second population of microspheres is distributed such that depressions of said first plurality of depressions have microspheres from said second population of microspheres and said first population of microspheres associated therewith.

116. (New) The composition of claim 83, wherein said first population of microspheres is distributed such that depressions of said second plurality of depressions have microspheres from said first population of microspheres and said second population of microspheres associated therewith.

117. (New) The composition of claim 83, wherein said second population of microspheres is distributed such that depressions of said first plurality of depressions have microspheres from said second population of microspheres and said first population of microspheres associated therewith.